PROCEEDINGS

OF THE

ACADEMY OF NATURAL SCIENCES

OF PHILADELPHIA.

VOL. I. NOVEMBER, 1841. No. 8.

STATED MEETING, NOVEMBER 2, 1841.

VICE PRESIDENT MORTON in the Chair.

DONATIONS TO MUSEUM.

Skull, fins and tail of Delphinus delphis, common Porpoise, from the Gulf Stream; and four Balistæ, in spirits.—From Mr. H. F. Baker, through Dr. Wm. Blanding.

Arca senilis, from Africa.—From Dr. Blanding.

Phrynosoma cornuta, in spirits, from Texas.—Presented by Mr. Alex. Lawson.

Remarkable vegetable organic remains, from Niagara.—From Dr. Blanding.

Two specimens of Anthracite, from Portsmouth, Rhode Island; and Granite of Leominster, Mass.—From Prof. Johnson.

Chlorophyllite: Unity, New Hampshire.—From Dr. C. T. Jackson, of Boston.

Skin and bones of Simia satyrus? preserved in salt, from India.—Presented by Capt. Land.

DONATIONS TO LIBRARY.

Proceedings of the Botanical Society of London, for 1839. 8vo.—From the Society.

American Journal of Science and Arts. Vol. 41. No. 2. Oct. 1841.—From the Editors.

Written Communications.—A letter was read from Dr. Frederick Tamnau, Jr., of Berlin, acknowledging the receipt of his diploma of membership in this Society, and soliciting an exchange of the minerals and fossils of Germany for those of America.

Professor Johnson made some remarks on the samples of Anthracite from Rhode Island, this evening presented, and stated—

That the formation in which they occur, reposes on a coarse conglomerate, which rests immediately on granite or hornblende rocks of the primitive series. The near proximity of primitive rocks appears to have exercised an important influence, not only on the position, but on the present character of the anthracite of this formation; for while it has thrown the beds into a highly inclined position, it has expelled the last vestiges of volatile matter, decomposed the sulphuret of iron, and changed the colour of the coal in some of the beds to a nearly steel blue. The vegetable impressions are in these cases to a great extent obliterated, and the traces of them only appear at the surfaces of deposition. In other beds, the impressions are more perfect, and their genera and species are more readily made out.

An idea has been formerly current, that the coal formation of Rhode Island and Massachusetts is of more ancient date than those of Pennsylvania; but the identity of fossil remains occurring in both, seems to determine the geological period of both to be the same. And in this respect we have analogies sufficiently numerous in our own country, to induce us to believe that all the coal formations are essentially contemporaneous, and that whether they rest on

granite, as in Rhode Island, Massachusetts and Virginia, on the older members of the secondary, as in the anthracite fields of Pennsylvania, or on the mountain or the "cliff" limestone of the western states, the coal series has every where been the product of a period in the history of our planet which was highly prolific in vegetable life, of which the remains were deposited on whatever member of preceding formations was exposed in a condition to receive them.

The anthracite of Rhode Island appears to have been subjected not only to a high temperature, but also to intense pressure, and to have been much comminuted by the friction of one member of the formation sliding over another in the uptilting which the strata have evidently undergone. The coal in all such cases being more tender and friable than the sandstones, slates and limestones, becomes the unguent in the joints of the stratification, and the results of its power to facilitate the motions of the strata as they are partially folded up, is, 1st, a pulverulent portion in contact with either the top or the bottom rock of the bed; 2d, a high polish imparted to some of the sliding surfaces of the more durable coal; 3d, an irregularity in the thickness of the coal beds, the indentations of the upper and lower rocks being not unfrequently found opposite to each other, forming thick places in the coal seam, and containing much of the broken material which has been displaced from the parts where the prominences of the rocks come nearly in contract, and almost shut up the seam.

Prof. Johnson adverted to the fact that for reasons stated by the geologists of Rhode Island and Massachusetts, viz. the great amount of drift or diluvial matter with which all parts of this coal formation have been covered over, the limits of the coal trough have not hitherto been traced with much precision.

Within the city of Providence, the strike of the beds is a little to the east of south, and the dip of course to the north of east. The mining operations are in general very troublesome and expensive, on account of being carried on below water level, and through a thick stratum of loose earth and gravel. Very little of the coal hitherto obtained has been of merchantable quality.